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No. 7. Farmers' Leaflet. April, 1902.

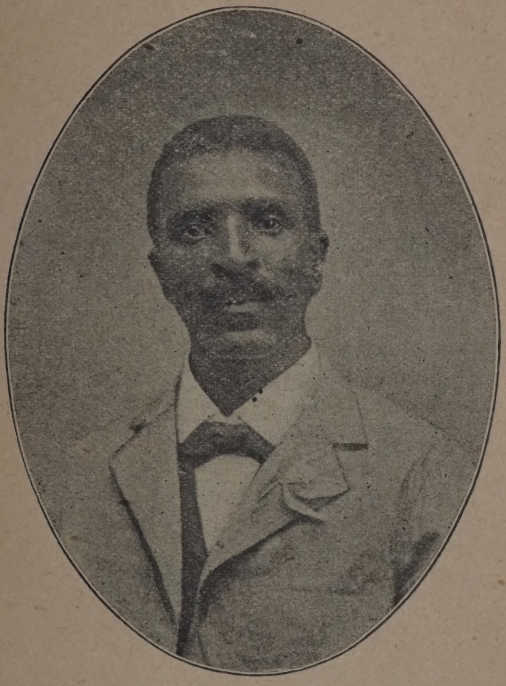
From the Bureau of Nature Study for Schools and Hints and Suggestions to Farmers.

TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE,
TUSKEGEE, ALABAMA.

The Need of Scientific Agriculture in the South.

BY GEO. W. CARVER.

Reprinted from the Review of Reviews by special request of the farmers' friends.
Manager.



G. W. CARVER, M. Ag.

At no period of the world's history have the demands upon agriculture been so exacting as they are now. All other professions are holding out their inducements to young men and women who are ready and willing to grapple with life's responsibilities. One says, "Come and I will make you a Gould;" another, "a Rockefeller;" still another, "an Astor,"— with all the luxuries their names suggest. The average Southern farm has but little more to offer than about one-third of a cotton crop, selling at 2 and 3 cents per pound less than it cost to produce it, together with the proverbial mule, implements more or less primitive, and frequently a vast territory of barren and furrowed hillsides and wasted valleys.

Another mortgage may have been added as an unpleasant reminder of the year's hard labor. The Southern farmers, as a whole, have been too slow to admit that the old one-crop and primitive implements are quite out of harmony with the new, up-to-date methods and machinery. Indeed, many are not aware that such conditions exist, and are patiently waiting, starving—blindly and stubbornly refusing to believe that their ills and misfortunes are not due to legislation or social reforms. Let us at once call a halt; stop making these excuses and chasing after false gods. We should form ourselves into a committee of one, each one, if possible, feeling the burden more strongly than the other—and, with concerted action, inaugurate a mighty campaign of education, which will lead the masses to be students of Nature. Our Northern competitors have changed their methods long ago, and we are still, in a very great measure, plodding along in the same old, hard, expensive, and unprofitable way.

It has become such a custom that we really expect, and frequently accuse our Northern and Western friends of gross neglect, when they seem slow to furnish us our breakfast bacon. Alabama, my own fertile and beautiful State, the land of my choice, fraught with so many charming possibilities—dealt me out this sort of breakfast some mornings ago: Breakfast bacon from Kansas, grits from Massachusetts, flour from Nebraska, oranges from Florida, bananas from Cuba, sugar from Louisiana and coffee from Java—the milk and butter being the only things produced at home. In this connection it is not unusual to see so-called farmers drive to town weekly with their wagons empty, and return with them full of various kinds of produce that should have been raised on the farm. So long as these conditions exist, the farmer will be forever looked upon as a sort of beast of burden. He, himself will be the very embodiment of pessimism, and imagine that all sorts of cliques, clans, and plans are being originated to militate against his progress.

Let farmers' institutes be organized, and all the methods of nature study be brought down to the every-day life and language of the masses. Let us become familiar with the commonest thing about us, of which two-thirds of the people are surprisingly ignorant. The highest attainments in agriculture can be reached only when we clearly understand, the mutual relationship between the animal, mineral, and vegetable kingdoms, and how utterly impossible it is for one to exist in a highly organized state without the other. If every farmer could recognize that his plants were real, living things, and that sunshine, air, food, and drink, were as necessary for their lives as for that of the animal, the problem would become at once intellectual, enjoyable, and practical. For example, if we examine the common sweet potato and pull it to pieces, we find (in round numbers) that the roots contain for every 100 pounds, 69 pounds of water, 1 pound of ash, 30 pounds of sugar, starch, plant cellulose, fat, etc. Carrying this analysis a little further, we find that sugar, starch, cellulose, and fats are composed of carbon, hydrogen, and oxygen; and water, hydrogen and oxygen—all three of these elements coming directly from the air. Hence, we readily see that all, except 1 pound of the 100 pounds of sweet potato roots, come from the air.

We are now interested to know how the plants get these elements, and how they are manufactured into the above substances.

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Water is easily accounted for, as we know it condenses in the air and falls to the ground in the form of rain, hail, snow, sleet, dew, etc., sinks into the earth and is kept near the surface by capillary attraction, and is taken up by the roots of the plants and distributed throughout them by specially arranged bodies designed for that purpose. Examining the leaves, we find the surface thickly studded with little openings, known as breathing pores. Within the leaf is a great laboratory, which is constantly kept busy manufacturing the carbon, hydrogen, and oxygen (which have been taken in directly from the air by those little pores) into starch, sugar, cellulose, fat, and other carbonaceous substances. Pursuing our investigation still further, we find that very small quantities of mineral matter, or soil-derived elements enter into the composition of the sweet potato; yet some of these elements, by reason of their solubility and volatile nature, become exhausted in the soil, and hence must be applied. There are only four which need give us much concern—namely, nitrogen, the most soluble and expensive of all, which makes in the plant chiefly stems and leaves; phosphoric acid, most important in the development of the seed, and which also assists in perfecting sugar and starch; potash, most active in the perfection of sugar and starch, therefore, the logical sequence is that the sweet potato should have only enough available nitrogen in the soil to make sufficent leaf-growth to take in large quantities of the elements necessary for starch, sugar, cellular matter, etc., and potash and phosphoric acid necessary to perfect these substances; also sufficient water, which acts as a common carrier to transport these constituents to places where most needed.

An acre of rich wheat soil, which we may regard as typical and best suited to the average field crop, if calculated to a depth of nine inches, when thoroughly dry, will weigh about 3,000,000 pounds plus the roots, and 2,250,000 pounds without them. It contains about 2,700 pounds of nitrogen, 7,675 pounds of phosphoric acid, and 7,875 pounds of potash. The soils of the South are greatly deficient, much of them containing as low as 315 pounds of nitrogen, 697 pounds of potash, and 392 pounds of phosphoric acid. This enormous deficiency must be made up by some means. The deficiency in nitrogen can be met almost wholly by the proper rotation of crops, keeping the legumes, or pod-bearing plants, growing upon the soil as much as possible, as they are all nitrogen-gatherers—and the common cow pea is the best, for all purposes, in the South.

The following method of fertilization has proven most satisfactory to us here at Tuskegee: One hundred and twenty pounds of muriate of potash, 600 pounds of acid phosphate and ten tons of stable manure, per acre; giving us a yield of 400 bushels of potatoes per acre. The stable manure was of the greatest value, as it added the much-needed humus (vegetable matter) and supplied the deficiency in nitrogen. Where stable manure, swamp muck, etc., cannot be had, 120 pounds of nitrate of soda should be added per acre. In connection with the chemical, the physical condition of the soil is most important, as without this only a partial crop will be the result. In selecting a soil for sweet potatoes, choose one dry enough to produce corn or cotton—sandy, with a clay subsoil, preferable. Plow the same with a two-horse plow to a depth of nine inches, broad-cast the stable manure, potash,

and phosphoric acid; plow or harrow it in, which ever will cover it best. This should be done at least two weeks before the plants are set, so that the chlorine contained in the muriate of potash will leach out and distribute itself through the soil, thus rendering it harmless to the roots of the plants.

In setting, a slight ridge should be made, and the plant set and cultivated in the usual way, unless very dry at setting time, in which case a thin mud should be stirred up, about the consistency of pancake batter; the roots of the potato should be dipped in this mud and set at once. Unless a very unusual period of drought ensues, no further watering is necessary. If nitrate of soda is desired, make two applications—the first about ten days after setting. This should be sown or drilled near the plants, care being taken to get as little on the leaves as possible, as, under certain conditions of sunshine and moisture, it badly injures the leaves. The second application should be made ten days after the first.

Careful preparation for harvesting and storing should begin with the first indication of frost. The vines should be cut and thrown across racks to dry, as they make a most excellent hay; the potatoes should be dug carefully and spread out—preferably under a shelter—to become dry. Sort them over carefully, removing all the bruised, or undesirable ones; after which they may be safely housed, banked, or put away after any of the various methods.

As one rides over our beautiful Southern States—all of which are more or less ideal, each possessed of its own peculiar charm—and sees the evidences of erosion and the devastation wrought by the forest fires and the woodman's axe, he is at once impressed with the importance of the subject. It is none the less apparent that education must cease to be so much a collection of abstract matter—beautiful to be looked upon and profound to listen to, yet, like the fairy-winged butterfly that flits from blossom to blossom, reveling in its sweets, and occasionally assisting other forces in polonating a few flowers, thus producing useful fruits, grains, or vegetables, but as a matter of mere accident, rather than a well-directed plan.

The American farmer should, in no sense, be the prototype of Edwin Markham's brainless fellow, whom he so graphically portrays:

"Bowed by the weight of centuries, he leans
Upon his hoe and gazes on the ground,
The emptiness of ages in his face.
* * * * * * * *
A thing that grieves not and that never hopes;
Stolid and stunned, a brother to the ox."

The virgin fertility of our soils, and the vast amount of unskilled labor, has been a curse rather than a blessing to agriculture. This exhaustive system of cultivation, the destruction of forests, the rapid and almost constant decomposition of organic matter, together with the problems of nitrification and denitrification, the multitudinous insects and fungus diseases which are ever increasing with marvelous rapidity year by year, make our agricultural problem one requiring more brains than that of the North, East, or West. By the advance of civilization, the markets have

become more fastidious; and he who puts such a product upon the market as it demands, controls that market, regardless of color. It is simply a survival of the fittest.

Duties on the Farm for April.

MOON OR MANURE.

Don't plant in the moon. The secret of the whole thing lies in the planting of crops when the soil is in the proper condition where the plant can get enough phosporic acid, nitrogen and potash to make the stalk and fruit. A farmer said the other day that he planted in the full moon and his crop made a fine stalk but no fruit, He did not, perhaps, know that the crop suffered for the lack of that kind of plant food which is used in making fruit. Feed the plant right and the moon will behave, it matters not which side of the moon's face is turned towards you when you plant.

GARDEN.

If the seed planted last month has made a poor stand, replant at once. Collards, cabbage, pepper, egg-plants and tomatoes may be set in open ground. If frost should make its appearance, the tomato plants must be covered with tin cans, boxes or papers folded into a hood. In this way very early tomatoes can be had. Another planting of cucumbers, squash, cushaws, pumpkins and watermelons should be made. More sweet potatoes may be bedded; corn, snap and lima beans, cow peas and okra should be planted. Cotton should be put in.

ORCHARD.

Your orchard will suffer if you are growing a crop among your trees now. The roots of the trees will need all the moisture and food they can possibly take in, the next three months at least. Cultivate your trees about as you would a cotton or corn crop. The trees will live longer and bear more and better fruit.

DAIRY.

Do your cows give from two to five gallons of milk a day when "fresh?" If not improve the one you have by giving her better attention. Every farmer should endeavor to have good cows and see to it that they are well kept.

POULTRY.

Are your hens laying? One healthy and vigorous cock to every ten hens is the proper mating. Eggs must be fertile if you would have them hatch. Too many eggs under a hen while setting is like too many acres in cotton; they don't pay. A little coal oil mixed well with hot soap suds helps much in freeing the chickens of lice. Keep the hen-house limed well.

If you have a fine sample of anything growing carry it to the monthly meeting. Show that you can grow things as well as talk about them.

We have a few of the following leaflets for those who write for them.

1. Wheat-growing in Alabama.
2. Buying Homes among the Farmers, and Planting of Peach,

Apple, Pear, and Plum Trees in the Cotton Belt.
3. The Winter Fun.
4. Training the Apple Tree.
5. Mortgage Lifting and The Farm House.
6. Eggs.

Write CLINTON J. CALLOWAY, Manager, or
GEO. W. CARVER, Director of the
Bureau of Nature Study for Schools and Hints and Suggestions to Farmers.

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From the Bureau of Nature Study for Schools and Hints and Suggestions to Farmers.

TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE,
TUSKEGEE, ALABAMA.

Hatching Chickens.

BY CLINTON J. CALLOWAY.

"Don't count the chickens before they hatch" is an old adage. It comes no doubt from an experience of failures to hatch chickens. Some of those who try to raise them, fail from year to year in reaching the best results because they don't know how to hatch a strong, healthy chick. Of course there is a reason for all failures as well as for all successes. Some of the farmers' wives are often heard to say, "I have such bad luck with my eggs. I set so many and so many; only a few hatched." Such a pity! Such a waste of time and eggs!! They blame the hen, weather and in fact everything but themselves. People of course learn to hatch chickens by hatching them, but there are a few facts which the farmers must bear in mind and follow closely and carefully if he would succeed in hatching the little biddies, with the hen.

Fig. 1. Barred Plymouth Rock.

Eggs must be fertile.

Eggs should be well formed.

Eggs ought to be from strong and active fowls.

Eggs should be about the same age.

Eggs should be clean.

The nest should be well made.

The hen ought to be a good stiter.

The hen should not have too many eggs.

The hen must be cared for while sitting.

FERTILE EGGS.

Eggs from healthy and active fowls well mated are usually fertile. Eggs laid by pullets and eggs laid at the beginning and ending of the laying period are not so apt to be fertile. By experience it has been found that all fertile eggs will not hatch but you can rely upon most of them.

WELL FORMED EGGS.

Look for the average sized egg when selecting for setting. An egg that is very much smaller or very much larger than others from the same fowls or eggs which are out of the usual shape should not be selected.

CLEAN EGGS.

Keep your eggs clean from the time they are laid until they are hatched. If it happens that the eggs become dirty while the hen is sitting clean them with some warm water and after wiping them dry replace them in the nest. Don't let any grease get on your eggs. Eggs left covered with filth soon become effected with disease which kill the hatching germs of the egg.

STRONG AND ACTIVE CHICKENS.

Fowls of the right age, healthy and active will most likely

Fig. 2. Black Minorcas.

give you eggs that will hatch out little chickens which will withstand many hardships and develop into strong and vigorous fowls.

Many people wonder why their little chicks are so tender, why they will not stand hardships, and live through diseases like others. No doubt by a little effort you can hatch a chicken which will give you very little trouble to raise.

EGGS OF EQUAL AGE.

By experience some have learned that eggs laid about the same time will, if good, hatch in twenty-one days. This is very important on account of the waste of time in fooling with eggs which require more time than that to hatch out. It has been found that those requiring more than twenty-one days are weak and cannot be raised successfully.

NEST BUILDING.

A nest should be made in a box or room 14 inches wide, 14 inches high and 16 inches long. A soap box often serves the purpose well. The box should be covered on top, bottom and all sides except the upper half where the hen is to enter. The opening should have a slat shutter which would serve to keep the sitter from being unduly disturbed. These little rooms or boxes can be placed in a continuous row around the wall of a room while the hens are sitting.

Fig. 3. Cochin.

The nests or boxes should be about eighteen inches above the ground during cold weather. When the weather gets warm it might be better to arrange nests on the ground in this climate. Leave boxes so that they may be easily moved. You will want to take them out and give them a thorough cleaning at least at the end of every hatching.

In making the nest it would be well to use first some soft soil or sand (dry) shaping it up from the bottom of the nest so that the center will be two inches lower than the sides but let the slant be gradual. Cover this with hay or something like it about two inches deep, keeping the same shape. A few tobacco stems, camphor-balls or sulphur on top of the sand or other dry soil will help to keep off lice.

GOOD SITTER.

Many hens make poor sitters. They want to leave their nests before hatching the eggs. They leave and stay so long the eggs are allowed to chill and for that reason fail to hatch. Set those hens which are gentle and kind. A medium sized hen, easy in her movements should be encouraged to sit. Never set a large,

Fig. 4. Wyandottes.

clumsy and unkind hen.

Some breeds of chickens make better sitters than others. Good sitters can be found among the Barred Plymouth Rocks, (Fig. 1) the Black Minorcas, (Fig 2) the Cochin, (Fig 3) the Wyandottes (Fig. 4) and the Langshan (Fig. 5)

Fig 5. Langshan.

CARE OF HENS.

Feed your sitters well once a day. Feed largely on coarsely ground corn in cold weather. It produces heat which is needed in hatching the eggs.

Let the hens also have plenty of water and a good dust bath at each feeding. The dust helps to keep them free from lice. Dusting the hen with sulphur will take the lice off. Keep your house and nest free from the insects and your hens are not apt to be troubled very much.

NUMBER OF EGGS.

Twelve eggs will be as many as the hen can hatch well. It depends upon the size of the hen and eggs. One could make the number larger when the weather grows warm. Broken eggs should be removed from the nest at once and nest and eggs cleaned.

After you have carefully set your hen, watched, cared for and protected her, she will likely reward you in three weeks with a large family of lively little biddies with strong bodies for further development.

Duties for May on the Farm.

CULTIVATION AND MANURE.

Farmers have gone to a great deal of trouble and expense to fertilize their crops. But this will be more than wasted if much skill is not used in the way the crops are worked. Keep the weeds out of your crops. Keep moisture near the roots of your plants.

Shallow cultivation will do much towards keeping the grass out and also in keeping moisture about the roots. A harrow or cultivator should be used often.

The farmers who have managed well will no doubt have crops of oats and wheat to harvest. It will be well to keep up with all your other work. Then when harvest time comes your other growing crops will not suffer.

Leave fishing, hunting and excursions alone.

Look out for all the wild fruit which ripens this month and make the most of it. Take a hint from the ant and begin at once to lay up for the coming winter.

Begin to look out for the hogs you are to fatten for next fall.

Set sweet potato plants.

GARDEN.

The garden is looking alright I am sure. The English peas are being gathered; the lettuce, the onion, the mustard, the radishes and irish potatoes are every day dishes for the family. As a result very little high priced meat, meal or flour is being used. Everybody will be surprised at the small debt made on this year's crop. I tell you there is nearly everything in saving!

Continue to plant squash, cushaws, snaps and lima beans, corn and okra.

Keep the insects off your plants. Use your fingers if you can't get anything better.

ORCHARD.

Don't let so much fruit stay on the trees that there will be danger in breaking down with fruit. Keep a sharp lookout for destructive insects. Don't let them get the upper hand. Continue to plow among your trees. Shallow cultivation will likely prove best. You can get ready to plant a pea crop next month, among the trees.

DAIRY.

The spring pastures are making an increase in the flow of milk with the cows. The farmer who spent some of his time in fixing a pasture last winter is now proud of the large cakes of yellow butter the cows are yielding; saying nothing of the milk. A plenty of these make it possible for the farmers to do away with so great use of hog meat. Take care of your cows and they will feed your family.

EDUCATION.

Make the boys and girls read the newspapers to the whole family for a few minutes. You can't imagine how much help it will be to all. If you haven't a newspaper, subscribe at once. It pays to have a good paper coming into your family once a week.

Are you putting your leaflets away? You will want them this another year.

It will pay to spend one earnest hour in the farmers meetings. Carry a sample of something and tell how you got it.

The following subjects have been treated in leaflet form:

No. 1. Wheat growing in Alabama.

No. 2. Buying homes among farmers, and planting of peach, apple, pear, and plum trees in the cotton belt.

No. 3. The Winter Fun.

No. 4. Training the Apple Tree.

No. 5. Mortgage Lifting and the Farm House.

No. 6. Eggs.

No. 7. The Need of Scientific Agriculture in the South.

For information, write

CLINTON J. CALLOWAY, Manager, or

GEORGE W. CARVER, Director of the Extension Bureau.

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From the Bureau of Nature Study for Schools and Hints and Suggestions to Farmers.

TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE,
TUSKEGEE, ALABAMA.

The Farm Milk Cow.

G. W. OWENS.

My farmer friends, have you a cow? If not, get as good a milk cow as you are able, as soon as possible.

Too many of our farmers are to-day in debt and tied up in mortgages because they have not learned the value and how to keep a real good milk cow on the farm.

The average farmer's daily living consists of salt pork (when he can get it), corn bread and molasses. This is neither a healthful nor a wholesome diet. Such a food is too rich in some things and not rich enough in others.

Mortgage Lifters.

On the other hand, the cow's milk is rich with everything needed to build up man generally. Thus, you see that when a plenty of milk and butter are used, hog meat is not a necessity.

MILK OR PORK.

Since we see that so far as our health is concerned milk and butter is the better food, would it not be also better from a standpoint of saving?

The milk from one cow giving one and one-half gallons daily for one year, is 547 gallons. Now it would take 1280 pounds of pork to do your family as much good, or rather to supply some of the important things which you would get from 547 gallons of milk. Twelve hundred and eighty pounds of hog meat will cost you, if bought in our present market, 166 dollars. Five hundred and forty-seven gallons of milk need not cost a level-headed farmer more than 40 dollars. Thus you see a saving this year to be about 126 dollars—not counting the manure and the calves.

COW BUYING.

When, how and what to buy is a very important part of any man's business. Herein often lies the cause of success. Great care must be exercised in purchasing a cow. It would not be wise to pay a big price for a cow that is very old, one that gives very

little milk, or one that has some bad traits; such as kicking, hooking or breaking out of enclosures. If you find yourself too poor to buy a good cow, it may be cheaper to get a heifer of good milk strain, and having, as far as possible, the signs of a good milker. You will find a number of valuable points shown in the figures one, two and three, which may help you in getting hold of a milk cow.

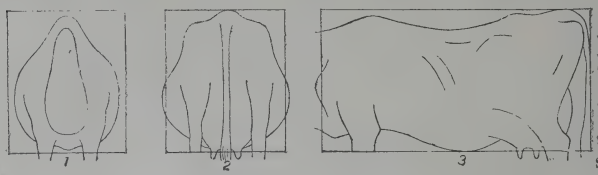

Fig. 1 Sectional view of milk cow (1) From front (2) Rear. (3) Side. From Soule, U. S. Dept. Agri.

The wide, wedge-shaped body, curved back, fine head and a gentle expression in the eyes, are all marks of a milker. Jerseys or grade Jerseys do well in most of our localities.

CARE OF THE COW.

A cow must have good shelter, plenty to eat and a kind and gentle hand to feed and milk her.

SHELTER,

Good, comfortable places for your cows lessen the amount of feed necessary. Material for building need not cost much. The difference in the amount of milk will soon pay you back.

Be sure to keep the stalls clean.

FEEDING.

A good pasture is, in most cases, the most economical way of feeding your cows. In the cotton belt we can have splendid pastures for our cows the year round. This, of course, will require some study and attention. Rye, oats and wheat, sown in early fall, make good winter grazing.

You should size the patch according to the number of cows.

It is a common practice among many farmers to fence off old, abandoned fields for summer pastures. If this is done, one should be certain that some where in this pasture a sufficient amount of grass can be found for food.

Hay of the different grasses, as well as pea vines and potato vines, should be housed for winter feed.

MILKING.

Since kindness and sympathy between the milker and the cow has so much to do in helping the milk flow, it is very important that no one have the care of the milk cow who does not love his work. The good milker will be kind to the cow. He will not beat her, he will not worry her with the dogs. He will curry and brush her down as he would if rightly caring for a horse or mule. Just before the time for the ticks to bother, he will give her two tablespoonfuls of powdered sulphur in her feed every week for about three weeks, and not nearly so often thereafter.

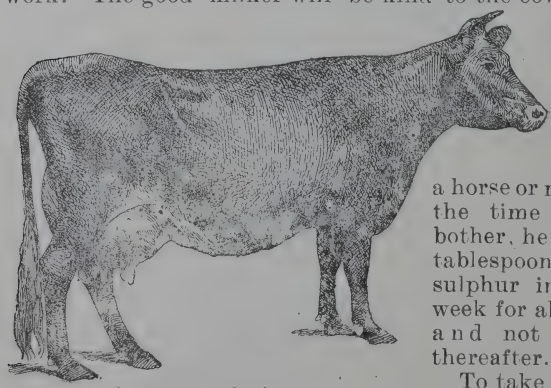

Fig. 2. A Good Milk Cow. From Soule, U. S. Dept. Agri.

To take the lice, fleas and ticks off, he will make a soap-

suds of one-third of a bar of soap and one gallon of hot water, mixing in well four tablespoonfuls of kerosene (coal oil). After cooling, he will apply externally. He will be sure to milk her twice a day, seeing to it that she has plenty to eat and a clean, warm place to stay.

THE MANURE.

The value of the manure from your cow can be made to almost pay for her feed. Our Southern soils are much in need of fertility. The milk cow can be made not only a feeder for the family, but a feeder for our soils. It has been found that it is more profit to a man to feed his cotton seed or cotton seed meal to his cows and then apply the manure to the soil, than it is to put seed or meal direct upon the soil. The value of manure for one year from one cow is about 30 dollars. Yet some of our poor farmers let this go to waste and buy commercial fertilizer—a practice which is making our soils and ourselves poorer each year. Rightly cared for, the family cow proves to be one of the best "mortgage lifters" within our reach.

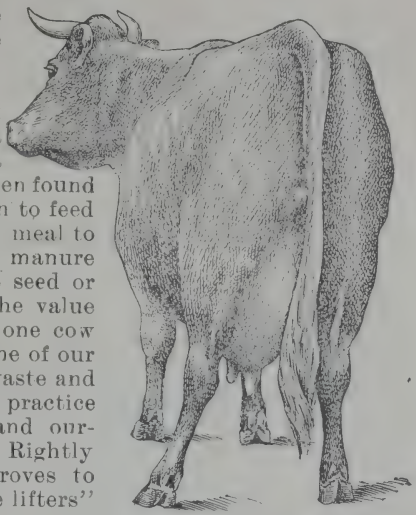

Fig. 3. A Good Milk Cow.
From Soule, U. S. Dept. Agri.

Suggestions For October, 1902.

Farmers should keep well up with the housing of their crops. Everybody should try to have what he raises keep in as nice shape as possible until it is used, This will make it more valuable to the consumer; whether you consume it or some one else. If you sell it, you will not only get a better price, but also a certain kind of respect, which a "botching" farmer never gets.

Don't sell any food stuffs now which will keep till spring. Some farmers are going to sell corn at 50 or 60 cents a bushel this fall, and buy the very same corn next spring at one dollar per bushel. The farmer who manages his business well at all seasons of the year, gets out of debt and buys himself a home.

Fatten up all the stock about you, and sell off all old and serviceless ones.

GARDEN.

Why should you put all your hen-house manure on your garden? Why be so careful with your wood ashes? Does it pay to make your garden rich? How much of the table food should come from your garden? Answer these questions like a man, and you will find yourself growing in the right direction. If you have a rich plot, continue to sow turnips, collards, kale, radishes, spinach and lettuce.

Thin out salad and keep out weeds and grass, if you want best results. A good fall garden is a blessing to any farmer. His wife and children can make a success of the garden if encouraged by the husband and father. Let each boy and girl have a willing hand in the work of growing the vegetables. They will soon be men and women, and should know how to manage a house garden

of their own. They should know the importance of a garden. There is no better way to teach them than by having a model yourself.

Don't be afraid to keep your table loaded each meal with vegetables from your garden.

ORCHARD.

In tree planting you must take as much care as in any other. If you care to set any trees in November, begin now to get ready. If trees are shipped to you before you are ready to plant, keep the roots in good condition by carefully burying them until you are ready.

It will pay you to send for our leaflet on tree-planting.

Look well around the trunks of your trees, already planted, just below the ground, and kill all the borers you can find. They will be just under the bark. You can find their abode by pressing lightly the point of a sharp-pointed iron rod through the bark. Don't injure the trees more than is necessary.

DAIRY.

Is there a nice lot of sweet, yellow butter at each meal? Do all the members of the family get as much milk to drink at each meal as they can make a way for? If not, there is something wrong. Poor management! Very little land will be paid for until you get your cows in shape to furnish milk for the family and have some left for the hogs or to sell.

Remember that you will have to feed your cows or put them where they can feed themselves. One dollar's worth of rye sown early enough this fall for grazing, will furnish you ten dollars' worth of milk and butter.

Very little hay will be saved in most sections of the cotton belt. So the best way to look out for the winter feed for your cows, is to spend a little time now sowing rye, wheat and oats for winter grazing.

POULTRY YARD.

If your chickens are suffering with sore-head, apply the following mixture or in this proportion: One tablespoonful of vasaline or lard, 2 to 5 drops of carbolic acid and sulphur enough to make this a paste.

EDUCATION.

Every boy on the farm should be taught how to shoe a horse or mule, to repair old farm tools, to build a neat farm house, and especially to know the real value of saving. Every girl on the farm should learn to be a neat and saving house-keeper, to do the family sewing, to raise chickens successfully and to take care of the house garden

Don't fail to take the boys and girls to your monthly meetings, where they may learn something from your discussions.

The following subjects have been treated in leaflet form:

No. 1. Wheat growing in Alabama.
No. 2. Buying homes among farmers, and planting of peach apple, pear, and plum trees in the cotton belt.
No. 3. The Winter Fun.
No. 4. Training the Apple Tree.
No. 5. Mortgage Lifting and the Farm House.
No. 6. Eggs.
No. 7. The Need of Scientific Agriculture in the South.
No. 8. Hatching Chickens.
No. 9. The Forage Crop.

For information, write

CLINTON J. CALLOWAY, Manager, or
GEORGE W. CARVER, Director of the Extension Bureau.

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No. 11. Farmers' Leaflet. Nov. 1902.

From the Bureau of Nature Study for Schools and Hints and Suggestions to Farmers.

TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE.
TUSKEGEE, ALABAMA.

Care of Milk on the Farm.

BYRD T. CRAWFORD.

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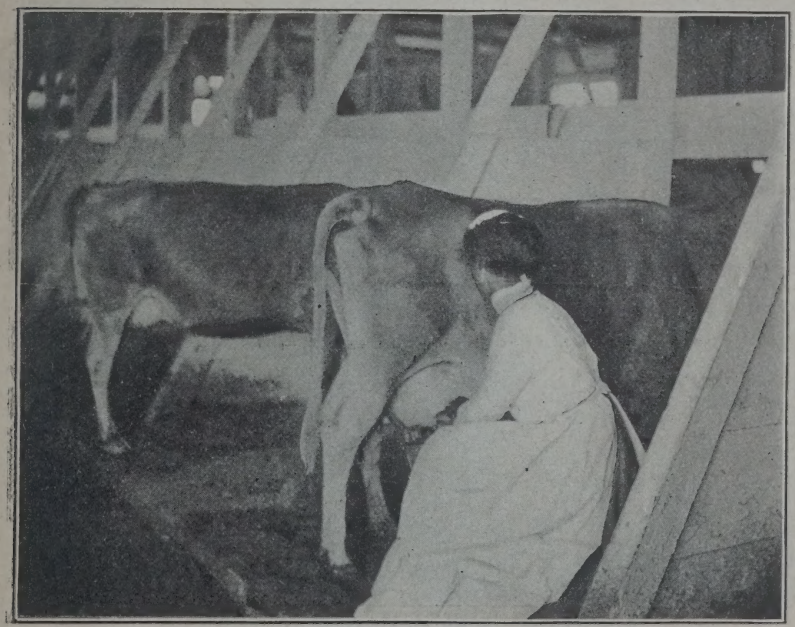
It should be the aim of every farmer not only to have plenty of milk, but to have it pure and wholesome.

If properly cared for, there is no better food. If improperly cared for it may bring on disease, when used, of the very worst kind.



GERMS.

There are good and bad germs which float in the air. These little living things enter the milk in great or small amounts, according to the conditions found about it. The germs which render the milk unfit for use, come mainly from diseased cows, cows which are not kept clean, poorly kept stalls, untidy milkers, diseased milkers and dirty milk vessels.

DISEASED COWS.

Cows, like people, have consumption, many kinds of fever, besides affected udders. Milk should not be used which comes from a cow showing trouble from any of these sources. Make every effort to keep the cow in good health. A good pasture, carefully provided with plenty of grass and pure, fresh water, goes a long ways in keeping a cow in good health. The cow should never be allowed to drink from filthy pools and mud holes. Don't forget

to keep plenty of salt within reach every day. During our cold weather, the health of the cow demands good shelter, with a clean, dry stall, with plenty of sunlight.

CLEAN COWS.

The cow should be kept clean, especially during the time of milking. The udder, the flanks and the under sides of the cow should be cleaned with a clean, damp cloth just before milking.

The writer has seen cows being milked which were covered with filth from the tip of their backs to the bottoms of their feet. Such should never be the case.

STALLS.

The harmful germs mentioned in the outset, are most plentiful where there are dirty and damp places, with bad odors. These germs are in such places by the millions. When one of these enters the milk it begins to increase very rapidly, and will continue, unless checked by conditions, which I will mention later.

Allow nothing to remain on the floor of your stall but nice, clean bedding of leaves, straw or sawdust. It would be well to whitewash the stalls at least twice a year, and keep plenty of sunlight and dry air about the place.

MILKERS.

The milker's body and clothes should be perfectly clean. His finger nails should be cut close. He should wash and dry the hands well just before beginning to milk. The milker should sit close up to the cow on a small box, milking very rapidly with both hands until every bit of milk is drawn. The first bit of milk drawn from each teat should be thrown away. Four or five days after calving, milk may be used. The good milker goes to his work each day at the same time. He finishes quickly, but does not fret the cow. The careless person should not be allowed to milk. Cows in such hands will soon cease to give milk. A person who dips snuff or a tobacco-chewer should not be allowed to

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handle milk or milk vessels. Sick persons, and especially those having any contagious disease, should not handle the milk or vessels.

STRAINING MILK.

As soon as the milk is drawn from the udder it needs to be strained, to get out hairs and other particles of matter that may find their way into it. A fine wire strainer, with two or three folds of fine white cloth fastened to the top rim of the strainer, is the best for straining.

MILK VESSELS.

The best and cheapest milk pails are made of ordinary tin. They should be as free as possible from seams, crevices and sunken places, to prevent the collection of filth and bad germs already mentioned. If pure, clean milk is put into dirty vessels, it soon becomes unfit for use. Every milk vessel should be cleaned as soon as milk is taken out of it.

HOW TO CLEAN A MILK VESSEL.

First, rinse the vessel thoroughly with slightly warm water. Then wash in water just as hot as the hand can bear. See that every particle of dirt is taken from seams and sunken places. Be sure to scald vessels each time the last thing, and put in the sun for a few hours. Keep them bright by scrubbing.

COOLING MILK.

With all the care a person may take, some harmful germs may get into the milk. In order to prevent the increase of these, the milk should be cooled as soon as strained, and kept so. If you have cool running water in your milk house, you can set the milk vessels containing the warm milk into this stream and let it remain until used. Otherwise, the vessels with the milk can be placed inside another vessel containing cool water. If the farmer will follow each step in the care of milk carefully, he will have pure, wholesome milk for the family and for others.

Suggestions for November, 1902.

Most of your crops should be housed before you hold the annual fair. One or two days will be long enough to let it run. You can't spare more time than that out from your farm. Have you saved some nice samples of what you have grown on the farm? Haven't you some home-made farm tools? Has the wife some nice quilts, dresses, or other samples of her handy-work? Of course the girls and boys have used some of their spare time to prepare something nice to show their skill and taste. Get all these things in nice shape and take them to the fair. Whether you get a prize on them or not, you will be helped. You may help others.

GARDEN.

Pile and burn all the trash in the garden. In this way you will destroy insects and their eggs. Lots of collards, cabbage, rutabagas, turnips, turnip salid, mustard, onions and shallots should be gathered from your garden during most of the winter.

Put the garden seed you gather where rats, mice or other enemies can't destroy.

Have enough seed on hand so that when you are ready to plant you will have enough to plant two or three times, in case you fail the first or second time.

DAIRY.

Remember that the manure from a cow will nearly pay for her feed, if properly cared for and applied to your crops. Remember that it is best to feed your cotton seed meal and hulls to your own cows. Don't sell everything fit for your cows to eat this winter, then buy the very same stuff back next spring to put directly on your crops. Better keep and feed now to the cattle, and then apply next spring to your crops.

ORCHARD.

Why do farmers fail in growing good fruit? A few reasons for failure follow: 1. Poor location for fruit trees. 2. Wrong kinds (varieties) of fruit trees are selected. 3. Land is not broken deep enough before trees are set. 4. The roots of the trees are not trimmed a little and the top is not cut back sufficiently. 5 The roots of the trees are crowded into small holes. 6. The trees are not properly fertilized. 7. The orchard is allowed to grow up in weeds. 8. The trees are robbed by raising other crops among them. 9. Farmers allow the cattle chances to bite off the branches. 10. The farmer doesn't fight worms, scale and blight which attack his trees.

POULTRY YARD.

Painting the heads with iodine and giving a dose of salts every few days is a good remedy for sore-head among the fowls. Keep those affected to themselves.

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No. 10. The Farm Milk Cow.
No. 11. Care of Milk on the Farm.

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